



cherubism

Cherubism is a disorder characterized by abnormal bone tissue in the lower part of the face. Beginning in early childhood, both the lower jaw (the mandible) and the upper jaw (the maxilla) become enlarged as bone is replaced with painless, cyst-like growths. These growths give the cheeks a swollen, rounded appearance and often interfere with normal tooth development. In some people the condition is so mild that it may not be noticeable, while other cases are severe enough to cause problems with vision, breathing, speech, and swallowing. Enlargement of the jaw usually continues throughout childhood and stabilizes during puberty. The abnormal growths are gradually replaced with normal bone in early adulthood. As a result, many affected adults have a normal facial appearance.

Most people with cherubism have few, if any, signs and symptoms affecting other parts of the body. Rarely, however, this condition occurs as part of another genetic disorder. For example, cherubism can occur with Ramon syndrome, which also involves short stature, intellectual disability, and overgrowth of the gums (gingival fibrosis). Additionally, cherubism has been reported in rare cases of Noonan syndrome (a developmental disorder characterized by unusual facial characteristics, short stature, and heart defects) and fragile X syndrome (a condition primarily affecting males that causes learning disabilities and cognitive impairment).

Frequency

The incidence of cherubism is unknown. At least 250 cases have been reported worldwide.

Genetic Changes

Mutations in the *SH3BP2* gene have been identified in about 80 percent of people with cherubism. In most of the remaining cases, the genetic cause of the condition is unknown.

The *SH3BP2* gene provides instructions for making a protein whose exact function is unclear. The protein plays a role in transmitting chemical signals within cells, particularly cells involved in the replacement of old bone tissue with new bone (bone remodeling) and certain immune system cells.

Mutations in the *SH3BP2* gene lead to the production of an overly active version of this protein. The effects of *SH3BP2* mutations are still under study, but researchers believe that the abnormal protein disrupts critical signaling pathways in cells associated with the maintenance of bone tissue and in some immune system cells. The overactive protein likely causes inflammation in the jaw bones and triggers the production of osteoclasts,

which are cells that break down bone tissue during bone remodeling. An excess of these bone-eating cells contributes to the destruction of bone in the upper and lower jaws. A combination of bone loss and inflammation likely underlies the cyst-like growths characteristic of cherubism.

Inheritance Pattern

This condition is inherited in an autosomal dominant pattern, which means one copy of the altered gene in each cell is sufficient to cause the disorder.

Other Names for This Condition

- Familial benign giant-cell tumor of the jaw
- Familial fibrous dysplasia of jaw
- Familial multilocular cystic disease of the jaws

Diagnosis & Management

Genetic Testing

- Genetic Testing Registry: Fibrous dysplasia of jaw
<https://www.ncbi.nlm.nih.gov/gtr/conditions/C0008029/>

Other Diagnosis and Management Resources

- GeneReview: Cherubism
<https://www.ncbi.nlm.nih.gov/books/NBK1137>

General Information from MedlinePlus

- Diagnostic Tests
<https://medlineplus.gov/diagnostictests.html>
- Drug Therapy
<https://medlineplus.gov/drugtherapy.html>
- Genetic Counseling
<https://medlineplus.gov/geneticcounseling.html>
- Palliative Care
<https://medlineplus.gov/palliativecare.html>
- Surgery and Rehabilitation
<https://medlineplus.gov/surgeryandrehabilitation.html>

Additional Information & Resources

MedlinePlus

- Health Topic: Craniofacial Abnormalities
<https://medlineplus.gov/craniofacialabnormalities.html>
- Health Topic: Tooth Disorders
<https://medlineplus.gov/toothdisorders.html>

Genetic and Rare Diseases Information Center

- Cherubism
<https://rarediseases.info.nih.gov/diseases/6036/cherubism>

Educational Resources

- Disease InfoSearch: Fibrous dysplasia of jaw
<http://www.diseaseinfosearch.org/Fibrous+dysplasia+of+jaw/8433>
- MalaCards: cherubism
<http://www.malacards.org/card/cherubism>
- Orphanet: Cherubism
http://www.orpha.net/consor/cgi-bin/OC_Exp.php?Lng=EN&Expert=184

Patient Support and Advocacy Resources

- AboutFace International
<http://www.aboutface.ca/>
- AmeriFace
<http://www.ameriface.org/>
- Children's Craniofacial Association
<http://www.ccakids.com/>
- Resource list from the University of Kansas Medical Center
<http://www.kumc.edu/gec/support/craniofa.html>

GeneReviews

- Cherubism
<https://www.ncbi.nlm.nih.gov/books/NBK1137>

ClinicalTrials.gov

- ClinicalTrials.gov
<https://clinicaltrials.gov/ct2/results?cond=%22cherubism%22>

Scientific Articles on PubMed

- PubMed
<https://www.ncbi.nlm.nih.gov/pubmed?term=%28Cherubism%5BMAJR%5D%29+AND+%28cherubism%5BTIAB%5D%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+1800+days%22%5Bdp%5D>

OMIM

- CHERUBISM
<http://omim.org/entry/118400>

Sources for This Summary

- Carvalho Silva E, Carvalho Silva GC, Vieira TC. Cherubism: clinicoradiographic features, treatment, and long-term follow-up of 8 cases. J Oral Maxillofac Surg. 2007 Mar;65(3):517-22.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/17307601>
- GeneReview: Cherubism
<https://www.ncbi.nlm.nih.gov/books/NBK1137>
- Lo B, Faiyaz-UI-Haque M, Kennedy S, Aviv R, Tsui LC, Teebi AS. Novel mutation in the gene encoding c-Abl-binding protein SH3BP2 causes cherubism. Am J Med Genet A. 2003 Aug 15; 121A(1):37-40.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/12900899>
- Novack DV, Faccio R. Jawing about TNF: new hope for cherubism. Cell. 2007 Jan 12;128(1):15-7.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/17218248>
- Ozkan Y, Varol A, Turker N, Aksakalli N, Basa S. Clinical and radiological evaluation of cherubism: a sporadic case report and review of the literature. Int J Pediatr Otorhinolaryngol. 2003 Sep;67(9): 1005-12. Review.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/12907058>
- Peñarrocha M, Bonet J, Mínguez JM, Bagán JV, Vera F, Mínguez I. Cherubism: a clinical, radiographic, and histopathologic comparison of 7 cases. J Oral Maxillofac Surg. 2006 Jun;64(6): 924-30.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/16713807>
- Ueki Y, Lin CY, Senoo M, Ebihara T, Agata N, Onji M, Saheki Y, Kawai T, Mukherjee PM, Reichenberger E, Olsen BR. Increased myeloid cell responses to M-CSF and RANKL cause bone loss and inflammation in SH3BP2 "cherubism" mice. Cell. 2007 Jan 12;128(1):71-83.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/17218256>
- Ueki Y, Tiziani V, Santanna C, Fukai N, Maulik C, Garfinkle J, Ninomiya C, doAmaral C, Peters H, Habal M, Rhee-Morris L, Doss JB, Kreiborg S, Olsen BR, Reichenberger E. Mutations in the gene encoding c-Abl-binding protein SH3BP2 cause cherubism. Nat Genet. 2001 Jun;28(2):125-6.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/11381256>

- Von Wowern N. Cherubism: a 36-year long-term follow-up of 2 generations in different families and review of the literature. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2000 Dec;90(6):765-72. Review.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/11113824>
 - de Lange J, van Maarle MC, van den Akker HP, Redeker EJ. A new mutation in the SH3BP2 gene showing reduced penetrance in a family affected with cherubism. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2007 Mar;103(3):378-81. Epub 2006 Sep 26.
Citation on PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/17321449>
-

Reprinted from Genetics Home Reference:
<https://ghr.nlm.nih.gov/condition/cherubism>

Reviewed: April 2007

Published: March 21, 2017

Lister Hill National Center for Biomedical Communications
U.S. National Library of Medicine
National Institutes of Health
Department of Health & Human Services